UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
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LOC 1617

STUDENT OUTLINE

VEHICLE FORDING

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given the requirement to execute vehicular movements, commander's guidance, and the references, conduct convoy operations, to ensure movement of assets to the specific destination is within the commander's established time schedules. (0402.04.05)

2. Enabling Learning Objectives: Given the references, commander's guidance, and a requirement to execute vehicular movements, identify procedures for fording motor transport vehicles, per the references. (0402.04.05e)

OUTLINE

1. PLANNING FOR DEEP VEHICLE FORDING OPERATIONS

a. The fording depths of equipment can be affected by any of the following factors:

(1) The height of the tide on a certain day or time of day and the season.

(2) The strength of the winds that can affect the flow of current.

(3) The surf condition that can be determined by the winds and lunar conditions.

(4) Underwater obstacles such as rocks, holes, and sunken debris.

(5) The composition of the underground water (soft, hard, sandy, etc.) and the sinkage depth.

b. In planning fording operations, consideration must be given to the fording site. A desirable fording site has:

(1) Existing routes on or near the sites on one or both shores.

(2) Covered and concealed approaches in cases of rivers, streams, or creeks.

(3) Suitable banks for entries and exits. The grade of the banks should be within the grade capabilities of the vehicle used, which can be found in the appropriate operator's manual.

(4) Water depth and river bed conditions that permit deep vehicle fording.

(5) Firm ocean bottom and bottoms free of obstacles and holes.

(6) Water current velocity of 0 to 1.5 meters per second. Many rivers and streams, however, will exceed this. In the case of an amphibious landing that requires fording, extreme caution is to be used in regards to swells and tides.

2. PREPARATION OF EQUIPMENT PRIOR TO FORDING

a. Cleaning of Equipment Prior to Fording

(1) All vehicle parts should be thoroughly cleaned with the appropriate cleaning materials and dried.

(2) The engine and engine compartment should be steam cleaned whenever possible.

(a) If the engine is steam cleaned, it should be operated for at least 1/2 hour or until all condensation has disappeared.

(b) If steam cleaning equipment is not available, wash the engine and the engine compartment with dry cleaning solvent or mineral spirits.

(c) Warning: The use of diesel oil, gasoline, or benzene (Benzol) for cleaning purposes is strictly prohibited.

(3) Make sure all surfaces, where tape and sealing materials are to be applied, are clean and dry, otherwise the material will not adhere or seal properly.

b. Lubrication of Equipment Prior to Fording. All vehicles should be thoroughly lubricated in accordance with the applicable vehicle lubrication order.

c. Use of the Operator's Technical Manuals, TM-10 Series

(1) When the operator is in doubt as to what course of action to follow in regards to fording, the operator's manual pertaining to that vehicle type should be used.

(2) The operator's manual provides the vehicle operator with the following information pertaining to fording:

(a) Before-fording instructions.

(b) During-fording instructions.

(c) After-fording instructions.

3. PERFORMANCE OF THE PRE-FORDING CHECKS

a. A thorough pre-fording check should be conducted on each vehicle that is to be involved in fording. This check should include, but not limited to, the following:

(1) Check the component parts to determine whether all assemblies, subassemblies, and accessories are:

(a) Properly assembled.

(b) Secure.

(c) Correctly adjusted.

(d) Lubricated.

(2) Carefully test and inspect the vehicle's entire electrical system for:

(a) Frayed wires.

(b) Loose wires.

(c) Possible shorts in the wiring.

(d) Broken and missing wiring.

(3) Make sure the fuel supply in the fuel tank is adequate and the engine crankcase is filled to the proper level.

(4) Make a thorough inspection of all seals throughout the vehicle and ensure the replacement of any that are questionable or defective. Tighten bolts at all areas that contain a gasket to ensure a snug fit.

(5) Check the tires and wheels to make sure they are in good condition. It may be necessary to have maintenance personnel check the condition of the wheel bearings if it is determined that they may be loose or damaged.

(6) Check the fording kit to make sure it is complete and all connections are properly mounted and secure.

(7) Avoid any unnecessary operation of the vehicles after waterproofing has been completed.

4. OPERATION OF THE VEHICLE IN WATER

a. Prior to the vehicle entering the water, the following procedures must be accomplished.

(1) The bell housing drain plug, if applicable to the vehicle being driven, should be removed from the bell housing storage boss and placed into the bell housing drain port.

(2) The fording selector should be activated to ensure normal engine ventilation.

(3) Make sure the dipsticks for the engine and transmission are properly installed.

(4) All on board equipment and cargo should be properly secured.

(5) Make sure the battery filler caps are installed and secure.

(6) Make sure that the fuel tank cap is properly installed and tight.

(7) Shift the transfer case into the proper gear range for the vehicle being driven.

(8) Shift the transmission into the proper gear range for the vehicle being driven. (Do not shift gears until the vehicle is out of the water and back on firm ground.)

(9) Set the hand throttle for the proper speed for fording, this will be determined by the type of vehicle being driven.

(10) If a course has been designated, if at all possible, do not deviate from it.

(11) Warm up the engine to the proper operating temperature. Do not run the engine to exceed the proper operating temperature, this could cause engine problems when entering the water.

5. PERFORMANCE OF THE AFTER-FORDING CHECKS AND SERVICES

a. Various corrective maintenance procedures must be performed after deep vehicle fording operations.

b. All procedures are important and failure to service the vehicle properly will result in unsatisfactory operation or complete damage to the equipment.

c. Service Performed on Equipment After Fording Operations

(1) All precautions should be taken as soon as practicable to stop deterioration and avoid damage before the vehicle is driven extensively in regular service.

(2) When the vehicle leaves the water:

(a) The fording selector should be deactivated to restore normal engine ventilation.

(b) The brake pedal should be depressed and released intermittently while maintaining a low rate of speed. This action will aid in drying out the brake linings.

(c) If applicable to the vehicle being driven, the drain plug should be removed from the bell housing drain port and placed back into the bell housing storage boss.

(d) Vehicles should be washed with fresh water as soon as possible after fording operations.

(e) Vehicles completing fording operations must be lubricated and serviced by organizational maintenance personnel in accordance with the applicable vehicle technical manual as soon as possible.

(f) If the vehicle exceeds its maximum fording depth allowing water to enter through the air intake system. The vehicle should be evacuated as soon as possible to the next higher echelon of maintenance to determine the extent of damage or needed repairs.

6. THE SERVICEABILITY, ACCOUNTABILITY, AND STORAGE OF FORDING KITS

a. When fording kits are not in use, they should be kept in a secure dry area.

b. To make sure each kit stays intact, they should be boxed, crated, or placed on a display board.

c. Fording kits not in use should be inventoried and inspected on a regular basis for:

(1) Damaged or deterioration to gaskets and rubber hoses.

(2) Rust on metal components.

(3) Crushed, dented, or bent metal components.

(4) Missing components.

d. To prolong the life of the rubber components, they should not be painted, oiled, greased, left to stand in water, or exposed to the elements.

REFERENCES:

1. Appropriate Vehicle Lubrication Order

2. Appropriate Operator's Manual

3. FMFM 4-9, Motor Transport